

IN THE CLAIMS:

Please amend claims 1-30 as follows:

1. (Currently Amended) A method of information collection and processing of ~~sample's~~ a surface of a sample, including said method comprising the steps of successive reading of ~~a~~ at least a portion of ~~a~~ force curve, ~~in at~~ predetermined points of the surface under control ~~within the process of approach and/or move~~ during at least one of approaching and moving apart of the sample and a probe, ~~which is~~ set up ~~at as~~ a cantilever, and

making a determination according to it parameters of ~~sample's parameters~~ the sample with further construction of ~~their~~ space distributions, which differs by, ~~that~~ a choice of points of control ~~is carried out~~ and values of ~~cantilever's~~ a deviation force are noted ~~within~~ during reading of the at least a portion of the force curve, ~~as well as~~ and/or or coordinates of its a fixed end are, ~~and/or~~ or derivatives from ~~cantilever's~~ the deviation force of a coordinate of its the fixed end are at least in the points of control of the force curve, ~~upon that~~, and according to said values in corresponding points of control and to a number of the points of control, a determination is made of the parameters of the sample, characterizing topography ~~and/or~~, properties of ~~sample's~~ the surface of the sample ~~and/or~~, a the number of the points of control and properties of its surface layers of the sample ~~are determined by a~~ ~~number of points of control~~, ~~and/or~~ ~~noted values of cantilever's~~ ~~deviation force~~, ~~and/or~~ ~~coordinates of its fixed end~~, ~~and/or~~

~~derivatives from cantilever's deviation force of coordinate of its fixed end in appropriate points of control.~~

2. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein one of the following is used: coordinates of sample's the surface of the sample and/or, coordinates of limits of their the surface layers, or thickness of the surface layers, or adhesion force of sample's the surface of the sample and/or, adhesion force of the surface layers, or elasticity coefficient of sample's the surface of the sample and/or, elasticity co-efficient of the surface layers, or frictional force of sample's the surface of the sample, and/or the surface layers are used in the character of the parameters, wherein topography, and/or properties of sample's the surface of the sample and/or and a number and properties of its the surface layers.~~

3. (Currently Amended) The method as set forth in claim 1, wherein a set of arguments are formed by values of ~~cantilever's the deviation force and/or or the coordinate of its the fixed end and/or or~~ derivatives from ~~cantilever's the deviation force of the coordinate of its the fixed end at least in the points of control;~~ determination of parameters is carried out by forming a set functions, using received arguments and determination of their values.

4. (Currently Amended) The method, as set forth in claim 1, wherein points, limiting quasi-rectilinear portions of the force curve, and/or or points, where force curve shifts slope jumpy, are chosen as the points of control.

5. (Currently Amended) The method, as set forth in claim 1, wherein points, where the coordinate of the fixed end of the cantilever and/or or a force of its the deviation and/or or its first or second derivatives according to the coordinate of the fixed cantilever's end, achieve threshold values, received, e.g., using results of previous scanning or measurement ~~are chosen as~~ the points of control.

6. (Currently Amended) The method, as set forth in claim 1, wherein construction of space distributions is carried out relative to coordinate of sample's the surface of the surface.

7. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that~~ wherein choosing of the points of control and/or or noting of values of cantilever's the deviation force, and/or or coordinates of its the fixed end, and/or or derivatives from cantilever's the deviation force of the coordinate of its the fixed end, are carried out after filtration of a set of current values of cantilever's the deviation force and the coordinates of its the fixed end.

8. (Currently Amended) The method, as set forth in claim 1, wherein a determination of the parameters, using noted values of cantilever's the deviation force and/or or coordinates of its the fixed end and/or or derivatives of cantilever's the deviation force of the coordinate of its the fixed end in a predetermined subset of points of control is carried out, taking into consideration values of indicated magnitudes in other subsets of the points of control.

9. (Currently Amended) The method, as set forth in claim 1, differing by, that wherein the determination of the parameters is carried out according to noted values of cantilever's the deviation force and/or or the coordinate of its the fixed end and/or or derivatives from cantilever's the deviation force according to the coordinate of its the fixed end in the points of control, placed before and after or after and before an absolute maximum of cantilever's the deviation force within the process of approach the sample approaching and sample's move moving apart accordingly.

10. (Currently Amended) The method, as set forth in claim 2, differing by, that wherein a number of the surface layers of the sample is determined as a number of points of control, limiting quasi-rectilinear portions of the force curve; and/or or as a number of points, where the force curve shifts slope jumpy without unit and reverse point within the process of approach

approaching and move moving apart of the sample and the probe, if it is included into a number of points of control.

11. (Currently Amended) The method, as set forth in claim 10, differing by, that wherein initial points of quasi-vertical portions are not taken into account upon determination of a number of the surface layers of the sample.

12. (Currently Amended) The method as set forth in claim 2, differing by, that wherein the coordinate of sample's the surface of the sample is determined by a relationship:

$$Ro = Zo - So$$

wherein Ro is the coordinate of sample's the surface of the sample, and

Zo, So is the coordinate of the fixed cantilever's end and magnitude of deviation of its a free end at the a moment of achievement (by cantilever's deviation force) of a value, equal to 0 or -A within the approach of the sample and the probe, and 0 or +A within move the moving apart of the sample and the probe, accordingly, where

A is a positive constant magnitude.

13. (Currently Amended) The method, as set forth in claim 2, differing by, that wherein the coordinate of sample's the surface of the sample is diagnosed upon fulfillment of the term $Zt - St = a$ constant,

where Z_t and S_t are current values of the coordinate of the fixed cantilever's end and of a magnitude of deviation of its the free end accordingly.

14. (Currently Amended) The method, as set forth in claim 2, differing by, that wherein coordinates of limits of the surface layers of the sample are determined as coordinates of the fixed cantilever's end in the points of control, not including initial points of quasi-vertical portions within the approach of the sample and the probe and final points of quasi-vertical portions within move the moving apart of the sample and the probe.

15. (Currently Amended) The method, as set for in claim 2, differing by, that wherein coordinates of limits of the surface layers of the sample and their thicknesses are determined according to a relationship like:

$R_i = Z_i - S_i$, $D_i = [R_i (i + 1) - R_i]$, where R_i and D_i are coordinate coordinates of a limit of an i -layer and its thickness accordingly, where

$i = (0, 1, 2\dots)$, and

Z_i , S_i are coordinate coordinates of cantilever's the fixed end and a magnitude of deviation of its a free end in an appropriate point of control, not including initial points of quasi-vertical points within the approach of the sample and the probe, and final points of quasi-vertical portions within move the moving apart of the probe and the sample.

16. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that wherein~~ coordinates of limits of the surface layers of the sample ~~relatively sample's surface and their~~ thicknesses are determined according to relationships ~~like~~:

$R'i = Zi - Si - Ro$, $Di = [R'(i+1) - R'i]$, where $R'i$ and Di is coordinate are coordinates of a limit of an i -layer, relative to sample's the surface of the sample and its thickness accordingly, where $i = (0, 1, 2\dots)$, and

Zi , Si are coordinate coordinates of cantilever's the fixed end and a magnitude of deviation of its a free end accordingly in an appropriate point of control, not including initial points of quasi-vertical portions within ~~move the moving~~ apart of the sample and the probe.

17. (Currently Amended) The method, as set forth in claim 14, wherein the coordinates of the limits of the surface layers of the sample measured within ~~approach or move the~~ approaching and moving apart, are determined relatively relative to a coordinate of the surface, which is measured also within move during the moving apart or approach accordingly approaching of the sample and the probe.

18. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that wherein~~ an adhesion force of the surface layers of the sample is determined by values of cantilever's the deviation force in the points of control, not including final

points of quasi-vertical portions ~~within move apart~~ during the
moving apart of the sample and the probe.

19. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that~~ wherein a summary adhesion force of the surface and the surface layers of the sample is determined as an absolute maximum of ~~cantilever's~~ the deviation force within the process of ~~move~~ moving apart of the probe and the sample.

20. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that~~ wherein a coordinate of sample's the surface of the sample is determined with a correction for summary adhesion force, which takes place between the probe and the surface, according to a relationship:

$Roa = Ro + Fac/Kp$, where Roa is a coordinate of sample's the surface of the sample with a correction taking into account a summary adhesion force, which takes place between the probe and the surface, where

Fac is the summary adhesion force of sample's the surface of the sample,

$Kp = Kk * tg\alpha / (1 - tg\alpha)$, and

Kk is a coefficient of ~~cantilever's~~ elasticity ~~for being~~ in, and

$tg\alpha$ is a slope of the force curve in the vicinity of point Z_0 .

21. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that wherein~~ a coordinate of sample's the surface of the sample is determined with a correction taking into account elastic properties of the surface, according to a relationship:

$$Roy = Ro + So(Kk/Kp) \text{ upon } Ro = Zo - So,$$

$$Roy = Zt - St + St(Kk/Kp) \text{ upon } Zt - St = \text{constant},$$

where Roy is a surface coordinate.

22. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that wherein~~ a coefficient of elasticity of the surface layers of the sample is determined according to a relationship:

$$Ki = B * Kk * \text{tg}\alpha_i / (1 - \text{tg}\alpha_i), \text{ where}$$

tg α _i is a slope of a portion of the force curve, placed between appropriate points of control, and B is a coefficient of proportionality.

23. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that wherein~~ a coefficient of elasticity of sample's the surface of the sample is determined according to a relationship:

$$Kp = Kk * \text{tg}\alpha / (1 - \text{tg}\alpha),$$

where Kp is a coefficient of elasticity of sample's the surface of the sample.

24. (Currently Amended) The method, as set forth in claim 2, ~~differing by, that approach and/or move wherein the approaching and moving apart of the sample and the probe are carried out before achievement of a threshold value by cantilever's the deviation force.~~

25. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein a reading of the force curve is carried out more than one time in predetermined points of sample's the surface of the sample under control.~~

26. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein a reading of the force curve in at predetermined points of sample's the surface of the sample under control is carried out within approach the approaching and move moving apart of the sample and the probe; and a magnitude of residual deformation is determined using a difference of received values of the parameters.~~

27. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein a modulated electric potential is applied to the probe within the process during a reading of the force curve's reading curve, and a magnitude of force of electric interaction of the probe and the surface and/or or surface's the surface layers of the sample is determined by a summary signal, using the way of demodulation.~~

28. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein~~ a reading of the force curve control is carried out more than one time ~~in~~ at predetermined points of ~~sample's~~ the surface of the sample under control, upon different electric potential potentials of the probe relatively ~~sample's~~ relative to the surface of the sample, determining a magnitude of electric interaction force of the probe and the sample and/or or the surface layers of the sample, using a difference of received values of ~~cantilever's~~ the deviation force.

29. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein~~ a reading of the force curve control is carried out more than one time ~~in~~ at predetermined points of ~~sample's~~ the surface of the sample under control, upon different electric potential potentials of the probe relatively ~~sample's~~ relative to the surface of the sample, determining a magnitude of a gradient of electric interaction force of the probe and the surface and/or or the surface layers of the sample, using a difference of received values of derivatives of ~~cantilever's~~ the deviation force, according to the coordinate of the fixed end.

30. (Currently Amended) The method, as set forth in claim 1, ~~differing by, that wherein~~ a registration of magnitude of a tunnel current between conducting the probe and ~~sample's~~ the surface of the sample is carried out together with a reading of the force curve or of its a portion thereof, using received set of

values for construction of a distribution of electric conduction of
the surface and/or or the surface layers of the sample.